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| **Unit: UBD Plastics/CNC**  **Grade: 8th Grade Technology** | |
| Stage 1: Desired Results | |
| **Established Goals** | |
| **South Dakota Middle School Technology Education Course Content Standards Covered**  TEMS.1.2 Examine the core relationships between technology and other areas of study  TEMS.3.1 Demonstrate an understanding of the components of design (feedback loop)  TEMS.3.3 Apply the design process  TEMS.4.1 Apply appropriate safety practices  TEMS.4.6 Select and use manufacturing technologies.  TEMS.4.7 Select and use construction technologies. | |
| **Understandings**  Students will understand:   * The history of plastics and its many uses. * Plastic has replaced many common materials. * The MasterCAM is a computer designing software | |
| **Essential Questions** | |
| * Why does it matter what type of plastic is used? * What materials have plastics replaced? * How is plastic made? * What is the difference between thermoplastic and thermosetting? * What are the nine basic forms of plastic? * What is the oldest known plastics molding process? * How are plastics cut? * What happened if plastic overheats while buffing? * What are the six career opportunities plastics offer? | |
| **Knowledge**  *Students will know…*   * The difference between thermoplastics and thermosettings. * The difference between hardwoods and softwoods. * Why finishes are applied to wood * How to calculate board feet | **Skills**  *Students will be able to…*   * Use tools appropriately * Correctly program a CNC Mill * Straighten, shape, square, & sand plastic * Buff and mold plastic |

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| **Stage 2: Assessment Evidence** | |
| **Performance Task(s):**   * Students will program and demonstrate an engraving activity using the MasterCAM software. * Students will cut, file and sand plastic candy dish. * Students will use compression molding to form the candy dish. * Students will use tools in safe responsible manner. * Students will work collaboratively to complete the module. | **Other evidence:**   * Students will complete two Plastics/CNC activities. * Students will complete an Understanding Plastics worksheet consisting of fill in the blank questions. * Assess understanding through module conversation and questioning. * Instructor observation of students working on task. * Assessment of student work. |

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| **Unit: UBD Plastics/CNC**  **Grade: 8th Grade Technology** |
| **Stage 3: Learning Activities** |
| Lesson Planner for 6 to 7-day Plastics/CNC module  **Day 1**  Student(s) will watch the Understanding Plastics video and answer questions pertaining to the video.  **Day 2**  Student(s) will complete Plastics video and worksheet and hand into instructor.  Student(s) will begin programming candy dish design using the MasterCAM software  **Day 3**  Student(s) will continue designing candy dish  **Day 4**  Student(s) will engrave candy dish using the CNC mill  **Day 5**  Student(s) will cut, sand and file candy dish  Student(s) will buff candy dish edges  **Day 6**  Student(s) will heat plastic candy dish and use a compression mold to form it to the correct shape. |